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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,106	04/06/2004	Hong Wang	2003P14134US	8261
7590 Siemens Corporation Intellectual Property Department 170 Wood Avenue South Iselin, NJ 08830				
05/19/2009				
EXAMINER				
SHAHRESTANI, NASTR				
ART UNIT		PAPER NUMBER		
3737				
MAIL DATE		DELIVERY MODE		
05/19/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/820,106

**Applicant(s)**

WANG ET AL.

**Examiner**

NASIR SHAHRESTANI

**Art Unit**

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

Applicant's arguments, see REMARKS, filed 01/30/2009, with respect to the rejection(s) of claim(s) 48-59 under 35 USC 101 and claim(s) 1-59 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art reference(s).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 20 recites a duty cycle to meet a maximum transducer power output specified by "Information for manufacturers Seeking Marketing Clearance of Diagnostic Ultrasound Systems and Transducers", which is not described in the specification.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-38 and 48-59 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The preamble of claims 1 and 48 set forth generating a combined image, however the body of the claims fails to positively set forth the generation of a combined image. Furthermore, the preamble of claim 28 sets forth a method of for ultrasound imaging, however the body of the claim fails to set forth generating an ultrasound image.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 1-59** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams (U.S. 2004/0267119 A1) in view of Miller et al. (U.S. 6,669,638 B1).

Adams teaches a method for matching transmit voltages of different ultrasonic imaging modes (see title) wherein a first imaging mode (B-mode) and a second imaging mode (color, Doppler, Duplex or Triplex) is provided in a multi-mode state (par. 005). Furthermore, Adams teaches directing the same power supply voltage (being predetermined) to all transmitting elements, operatively switching between imaging modes (par. 0013) on a line by line basis and only when the requirement for the transmit power for an imaging modes is less than that provided by power supply voltage, pulse width modulating (duty cycle modifying) the transmit waveform for that imaging mode, for example, by directing a pulse width modulation signals to all of the transmitting elements. Hence, it can be deduced that Adams also teaches a wide range of voltage power application as well as modified duty cycles. Furthermore, it would have been obvious to one of ordinary skill in the art to have provided advanced adjustability of the duty cycle since it has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens, 101 USPQ 284 (CCPA 1954)*.

Adams fails to specifically teach and discuss duty cycle selection in response to a restriction on surface temperature of a transducer.

Miller et al. teach an Imaging Ultrasound Transducer Temperature Control System and Method (see title), a method of controlling the heat of an ultrasonic transducer is disclosed (see abstract). Miller et al. further teach changing imaging modes from B-mode imaging to that of A Mode or M Mode (col. 3 lines 9-22) and wherein the system cycles rapidly between a higher power imaging mode and a lower power imaging mode, and the resulting data is combined to

form a single image (abstract). More importantly, Miller et al. teach wherein various parameters (i.e. duty cycle) can be modified in order to reduce the ultrasonic transducer temperature (col. 10 lines 3-16). Miller et al. further teach temperature sensors and regulation of temperature based on pre-determined standards (col. 6 lines 8-13). Miller et al. also teach a power supply (element 320) under control of controller (element 301), supplying regulated power to various components of the ultrasonic system.

It would have been obvious to one of ordinary skill in the art at the time of invention to have modified the apparatus and method as taught by Adams and to have incorporated the teachings of Miller et al. to acquire images at different modalities while maintaining a standard of temperature across the transducer(s) and the repetition of limitations (a) - (c) would have been obvious to one of ordinary skill in the art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NASIR SHAHRESTANI whose telephone number is (571)270-1031. The examiner can normally be reached on Mon.-Thurs: 7:30-5:00, 2nd Friday: 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ruth S. Smith/  
Primary Examiner, Art Unit 3737

/Nasir Shahrestani/  
Examiner, Art Unit 3737